DOCUMENT RESUME

ED 129 733 95 SP 010 446

AUTHOR Joyce, Bruce R.; And Others
TITLE Issues to Face. ISTE Report I.
INSTITUTION National Center for Education Statistics (DHEW), Washington, D.C.; Office of Education (DHEW), Washington, D.C. Teacher Corps.
PUB DATE Jun 76
NOTE 50p.; For related documents, see SP 010 447-449

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS Communications; Delivery Systems; Governance; Inservice Courses; Inservice Programs; *Inservice Teacher Education; Institutes (Training Programs); *Policy Formation; *Professional Personnel; Teacher Centers; *Teacher Education; Teacher Workshops
IDENTIFIERS *Inservice Teacher Education Concepts Study

ABSTRACT

The Inservice Teacher Education (ISTE) Concepts Study gathered information from educational professionals and policy-makers. The resulting mass of information and concepts is presented in this overview of the nature of ISTE and its problems. The general structural problem of ISTE involves the interaction of several dimensions: (1) the governance system, composed of the decision-making structures which legitimize activities and govern them; (2) the substantive system, composed of the content and process of ISTE and that deals with what is learned and how it is learned; (3) the delivery system, including incentives, interfaces between trainees, trainers, and training and staff, which deals with motivation, access, and relevance to the role of the individual professional; and (4) the modal system consisting of the forms of ISTE, ranging from sabbaticals abroad to intensive on-site institutes These dimensions and their interaction are discussed. (JMF)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED129733

REPORT I

Issues to Face

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Joyce • Howey • Yarger
Teacher Corps Recruitment
and Technical Resource Center Directors

SP010 446

ISTE REPORT I

Issues to Face

Bruce R. Joyce
Stanford Center for Research and Development in Teaching

Kenneth R. Howey
University of Minnesota

Sam J. Yarger
Syracuse University

Teacher Corps Recruitment and Technical Resource Center Directors

William C. Hill
University of Southern California

Floyd T. Waterman
University of Nebraska, Omaha

Barbara A. Vance
Wayne State University

Donald W. Parker
Howard University

Michael G. Baker
University of Georgia

June 1976

Palo Alto, California

The Inservice Teacher Education Concepts Project was sponsored by the National Center for Education Statistics and the Teacher Corps.

Funds were administered and interviews conducted by the Teacher Corps Recruitment and Technical Resource Centers at:

University of Southern California	William C. Hill, Director
University of Nebraska, Omaha	Floyd T. Waterman, Director
Wayne State University	Barbara A. Vance, Director
Howard University	Donald W. Parker, Director
University of Georgia	Michael G. Baker, Director

The project was coordinated by:

Bruce R. Joyce	Stanford Center for Research and Development in Teaching
Lucy F. Peck	Hofstra University

The views presented are the responsibility of the project staff and are not necessarily the opinions of the funding agencies.

Project Monitors:

Shirley A. Steele	National Center for Education Statistics
Velma J. Robinson	Teacher Corps

Chief Administrators of the agencies:

Marie D. Eldridge	National Center for Education Statistics
William L. Smith	Teacher Corps

Inservice teacher education is, in many ways, the key to the rejuvenation of education and of the individual teacher. There is little question that it must serve both the continuous improvement of education and the continuous personal and professional development of individual teachers.

We are pleased to see the appearance of these reports. Generated by a project jointly sponsored by our agencies, the reports represent a first step in the formal identification of the primary information needs and issues in the inservice teacher education area.

Policy makers across the nation will shortly be making decisions about new forms of governance in teacher education, new methods, the increasing involvement of teachers as trainers and organizers, and, above all, the development of more effective structures for insuring that the needs of schools, communities, teachers, and children can be met adequately. As policy makers approach these decisions, they will need adequate concepts for analyzing the problems of the area, sufficient data about present practices, and opinions regarding alternative future practices to guide their thinking. We hope this first step will assist policy makers at all levels and that succeeding steps will bring greater clarity to this important area.

We wish to thank the nearly two thousand persons who made contributions to this study, either by consenting to provide their time in the interview process, writing or reviewing position papers, managing the interviews, or participating in the other time-consuming and technically difficult tasks which were part of this complex project. Shirley Steele of the National Center for Education Statistics and Velma Robinson of Teacher Corps are also to be thanked for closely monitoring the project and sharing in its direction, in collaboration with the staffs of the Teacher Corps Recruitment and Technical Resource Centers and the Stanford Center for Research and Development in Teaching.

Marie D. Eldridge
Chief Administrator
National Center for Education
Statistics

William L. Smith
Director
Teacher Corps

CONTENTS

Project Personnel: Stanford Center for Research and Development in Teaching vii

Project Personnel: Teacher Corps Recruitment and Technical Resource Centers viii

States in which Interviews Were Conducted ix

History and Structure of the ISTE Project x

Present Investment and Forecast: The Problems of ISTE Are Structural 1

On Definitions: Problems of Language 3

On Cloudiness: Problems of Perception 4

Structure and Variation 5

Figure: The Systems of ISTE 6

Governance and Creative Collaboration 7

The Question of Ownership and Orphanage 8

Funding 9

The Community 10

Levels of Governance 11

The Modal Dimension 14

The Job-Embedded Mode 14

The Job-Related Mode 15

The Credential-Oriented Mode 16

The Professional Organization-Related Mode 16

The Self-Directed Mode 17

Delivery Systems 19

Incentives 20

Interfaces 20

Staff 21

The Substantive Dimension 23
Process 24
Content 26

Summary 29

Reference Notes 31

Appendix A: Teacher Corps Recruitment and Technical Resource Centers 34

Appendix B: Project Consultant Interviewers 35

PROJECT PERSONNEL

STANFORD CENTER FOR RESEARCH AND DEVELOPMENT IN TEACHING

Bruce R. Joyce	Project Coordinator
Lucy F. Peck Hofstra University	Project Coordinator
Terry J. Rice	Coordinator of Editing
Marilyn R. Harper	Coordinator of Finances and Final Reports
Kathleen M. McNair	Data Analyst
Richard Diaz University of Southern California	Data Analyst
Pamela H. David	Data Analyst
Kenneth R. Howey University of Minnesota	Consultant
Sam J. Yarger Syracuse University	Consultant
Louis J. Rubin University of Illinois	Consultant
Elinore R. Brown	Typist
Colette R. Childs	Typist

PROJECT PERSONNEL

TEACHER CORPS RECRUITMENT AND TECHNICAL RESOURCE CENTERS

WESTERN CENTER

William C. Hill	Director
Joseph Romo	Associate Director
Ramona Gordon	Office Manager
Judy English	Typist
Roxie Bagley	Recruiter

MIDWESTERN CENTER

Floyd T. Waterman	Director
Thomas Dean	Associate Director
Edn . Alexander	Administrative Assistant

GREAT LAKES CENTER

Barbara A. Vance	Director
Wilbert Bledsoe	Associate Director
Elen'ine Bonner	Office Manager
Caroline Wallace	Secretary/Bookkeeper
Ruth Peach	Secretary
Karen Crawford	Secretary

NORTHEASTERN CENTER

Donald W. Parker	Director
Patricia Matthews	Associate Director
Shirley Jones	Chief Application Processor
Athea Rayo	Secretary
Carol Coy	Assistant
Marian Hankerson	Assistant

SOUTHEASTERN CENTER

Michael G. Baker	Director
Barbara Ogletree	Survey Coordinator
Roger Bryant	Technical Assistant
Linda Anderson	Secretary/Bookkeeper
Mary Davis	Secretary

STATES IN WHICH INTERVIEWS WERE CONDUCTED

Alabama
Arizona
California
Colorado
Connecticut
Florida
Georgia
Hawaii
Indiana
Iowa
Kansas
Kentucky
Louisiana
Maine
Maryland
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
Montana
Nebraska
Nevada
New Hampshire
New Jersey
New Mexico
New York
North Carolina
North Dakota
Ohio
Oklahoma
Oregon
Pennsylvania
South Carolina
Tennessee
Texas
Utah
Vermont
Virginia
Washington
West Virginia
Wisconsin

District of Columbia

HISTORY AND STRUCTURE OF THE ISTE PROJECT

In June of 1975, the National Center for Education Statistics, with the cooperation of the National Teacher Corps, made the decision to inaugurate a series of studies in inservice teacher education. The phase of the study which is reported in these monographs is that of conceptualization.

Three sources of data were consulted in order to build concepts about the structure of inservice teacher education. The first of these was the existing literature. The second source of data were the positions of experts about the nature of the primary issues involved in the reconceptualization of the area. The third source were the opinions of several categories of interested parties, including teachers, administrators of school districts, school board members, community members, congressional representatives, state department of education officials, and higher education administration and faculty, about the major issues involved in inservice teacher education and the alternative ways of approaching these issues.

There were two primary purposes of the study. The first was to determine the data needs in the area. This information is to be used as the base for a succession of studies to determine the facts about inservice teacher education, the alternative issues, and the alternative solutions to these issues. The second purpose of the study was to conceptualize the area in such a way that Teacher Corps could guide its activities more effectively in light of the facts and opinions of the field.

The inservice teacher education project was coordinated by Bruce Joyce of the Stanford Center for Research and Development in Teaching and Lucy Peck of Hofstra University. The staffs of the five Teacher Corps Recruitment and Technical Resource Centers arranged for the interviews, managed budgetary matters, developed small conferences in important areas of inservice education, and contributed to the editing and publishing of the present reports.

This monograph is one of a series of five reports on the conceptualizing phase of the study of inservice teacher education. Following is an outline of the monographs:

Report I: Issues to Face

Bruce R. Joyce, Kenneth R. Howey, Sam J. Yarger, and the Teacher Corps Recruitment and Technical Resource Center Directors

Report II: Interviews: Perceptions of Professionals and Policy Makers

Bruce R. Joyce, Kathleen M. McNair, Richard Diaz, and Michael D. McKibbin
with Floyd T. Waterman and Michael G. Baker for the Teacher Corps Recruitment and Technical Resource Centers

Report III: The Literature on Inservice Teacher Education: An Analytic Review

Alexander M. Nicholson and Bruce R. Joyce
with Donald W. Parker and Floyd T. Waterman for the Teacher Corps Recruitment and Technical Resource Centers

Report IV: Creative Authority and Collaboration

A collection of position papers by Sam J. Yarger, James Boyer, Kenneth R. Howey, Marsha Weil, Ralph M. Pais, Winifred I. Warnat, Robert D. Bhaerman, Robert Luke, and David Darland
with introductions by Sam J. Yarger and Bruce R. Joyce
with William C. Hill for the Teacher Corps Recruitment and Technical Resource Centers

Report V: Cultural Pluralism and Social Change

A collection of position papers by Richard M. Brandt, Richard P. Mesa, Marilyn Nelson, David D. Marsh, Louis J. Rubin, Margaret C. Ashworth, Elsa N. Brizzi, and Henrietta V. Whiteman
with introductions by Bruce R. Joyce, Kenneth R. Howey, and James Boyer
with Barbara A. Vance for the Teacher Corps Recruitment and Technical Resource Centers

The first report is a relatively short summary of the data needs in inservice education and the major issues identified from the literature, the interviews, and the position papers. The second report contains the results of the interviews with more than one thousand teachers, school administrators, higher education administrators and faculty, and others concerned with policy making in the inservice area. An analysis of the literature in the field is described in the third report, while in the fourth and fifth reports, shortened versions of position papers in several major areas are presented. In the fourth report, the problems of collaboration are explored, and issues attendant to cultural pluralism and social change are examined in the fifth report.

This report synthesizes the products of the ISTE Concepts Study. "ISTE" is shorthand for inservice teacher education, by which we mean formal and informal provisions for the improvement of educators as people, educated persons, and professionals, as well as in terms of the competence to carry out their assigned roles. The report is based on an analysis of interviews with over one thousand education professionals and more than two hundred policy makers at the state and national levels, a study of over two thousand items of literature, and sixteen position papers by expert observers and representatives of special positions. Teachers, representatives of teacher organizations, school administrators, college faculty, board of education members, officials of state and national legislatures, legislative analysts, officials of the federal executive branch, and many others contributed their advice, opinions, and knowledge to the study.

The resulting mass of information and concepts is so large and diverse that a mere summary of the ideas or description of the richness of opinion cannot be inclusive. Consequently, we urge the serious student of inservice teacher education (hereafter ISTE) to read the four source volumes in this series, listed on page x, and the many documents on which the volumes drew.

In this brief overview, we present our interpretation of the nature of ISTE and its problems as we have perceived them from this first "conceptual" phase of our inquiry. In subsequent phases, firmer data about the facts of ISTE will be generated and alternative methods for improving it will be tested, both in surveys of opinion and in experiments with the alternative forms.

PRESENT INVESTMENT AND FORECAST: THE PROBLEMS OF ISTE ARE STRUCTURAL

ISTE, as it presently exists, is accomplished by a vast and complex organization, a fact of which one must be aware in order to think effectively about the ISTE enterprise. Although there is great discontent with ISTE,[1] and many professionals and nonprofessionals apparently regard it almost as though it did not exist, it does exist, and on a large scale.

Despite dissatisfaction with ISTE, statistics show that over half of all United States teachers presently hold master's degrees, while about five

percent of the total instructional staff of schools have received a doctorate. Much of the instruction teachers have received has come from college-based and school district-based programs of ISTE. We estimate that there are seventy to eighty thousand education professors, supervisors, and consultants presently engaged full or part-time as instructors in inservice education, which is nearly one instructor for every twenty-five teachers presently holding positions. In addition, there are almost one hundred thousand principals and vice principals in the seventeen thousand school districts of the nation--one for about every twenty classroom teachers. One of the tasks assumed by principals and vice principals is helping their teachers grow in professional competence, and even if they only spent ten percent of their time in such activities, the effort expended would be enormous. Finally, we must consider the nearly fifty thousand nonsupervisory instructional personnel, such as reading instructors, media and communications experts, and mental health specialists, who act in part as support personnel for teachers. Thus there may be as many as a quarter of a million persons in the United States who engage as instructors in some form of ISTE activity--this is about one instructor for every eight teachers. Not included in these figures are team leaders and other persons who have formal or informal supervisory roles within the classroom, of which there may be tens of thousands; department chairpersons, especially at the secondary level, who participate to some degree in the inservice domain; and teachers who themselves staff inservice courses. Possibly as many as twenty-five thousand teachers each year serve their fellow teachers and aides as instructors in courses, workshops, or other events.

The size of this apparent investment is confusing for several reasons. First, it is confusing because so many people seem to feel the effort is very weak--even impoverished--and is a relative failure. Second, most districts and higher education institutions evidently believe that more funds are urgently needed to develop adequate staff development programs. Third, if the above estimates are at all reasonable, then we are led to the unnerving conclusion that one of the largest training enterprises in the United States is an incredible failure!

If one out of eight of all educational personnel is trying to help others in the field grow professionally, then this failure cannot simply be a matter of investment of time or energy. There are obviously enormous structural problems in the way ISTE is being operated which have to be resolved; however, the problems do not seem to be specific, but rather general, as indicated by the

fact that both interviewees and position paper writers spoke more coherently about general issues than they did about specific ones. There are some specific areas of high agreement, to wit, a preference to include teachers as staff much more than has been done previously[2] and to make ISTE more responsive to teachers' job needs and more relevant to their emergent roles.[3] But, the more specific the interviewees became on these issues, the more vague they became about just what should be the objectives and means of the inservice process. Again, there is agreement that collaboration should be used to guide inservice education,[4] but the more collaboration was specifically probed, the more vague the responses became. There are two general structural problems with ISTE. First, the vast varieties of possible training options need to be interfaced closely with teacher needs and general thrusts of school districts. Theory-based approaches to education need to be followed up by clinical training which is largely mediated by teachers themselves. Second, the vast problems of time in which to be trained and providing training close to the work site have obviously not been solved at all.

ISTE, in short, is a cornucopia of problems crying for alternative solutions. No single approach to the governance, structure, substance, or process of ISTE is likely to solve very many of its problems. We obviously should enter a period of experimentation with alternatives--alternatives which make inservice education more relevant to the teacher and which experiment with various forms of governance, kinds of interfaces, alternative trainers, modes of directive, and self-directed teacher education.[5]

ON DEFINITIONS: PROBLEMS OF LANGUAGE

It is relatively easy to discover some of the important features of ISTE and to build certain kinds of concepts. In other cases, however, controversy and rapid development and change have combined to make it difficult to focus on the area effectively. The formation of definitions in ISTE is especially difficult,[6] as is revealed by the many languages used in the literature, position papers, and interviews. Terminology ran riot. With the exception that nearly everyone spoke negatively about ISTE, there was relatively little agreement about definitions or about how ISTE should be carried on.

By ISTE, we refer to the growth of the professional educator in three ways. First is general growth--the development of a human being whose growth potentially enriches his relationships to children and the kinds of instruction he is able to give. The second type of growth is the improvement of the educator's competence to carry out his particular role. For a secondary school teacher, for example, this may include the development of increased competence in subject specialties and mastery of the repertoire of approaches to teaching. For an administrator, competence as an organizer, facilitator, and leader in curriculum and instruction would also be included. Finally, growth refers to training to better enable the educator to implement curricular and instructional reform decided on by the persons responsible for the shape of the school in which the educator works.

In the course of our study, we have become convinced that no single mode of ISTE speaks to all of the above needs for growth, but that very few modes speak only to one need. Sabbaticals, for example, can be granted to teachers for any of the three kinds of broad purposes outlined above: The teacher may use a sabbatical for general professional development as an educated human being, to study techniques specifically related to his type of educational role, or, less often, to study a curriculum approach which is to be implemented by his school.

The actual great variety in ISTE[7] is one of the reasons for the proliferation of terminology. ISTE ranges from self-directed sabbaticals (which are relatively rare) to degree-oriented programs of courses in universities, to workshops and practicums offered onsite. It also includes informal activity by members of teams in schools, formal and informal instruction and tutoring by mental health personnel, directed and self-directed activity in teacher centers, and a host of other variations. Because of the large number of varieties of ISTE, it is not surprising that the same terms might be used differently by different people.

ON CLOUDINESS: PROBLEMS OF PERCEPTION

The connotative language used to describe ISTE is a different sort of complication. Although the interviews indicated that there is widespread agreement that ISTE has serious flaws, equally solid agreement that it is necessary, and an apparent consensus that its main problems are structural,

heavy criticism from all levels of educational personnel clouds the substantive issues. Teachers, school administrators, higher education faculty and administration, legislators, school board members, and scholars in the field all tend to speak of ISTE with negative connotations.

It is arresting that the majority of the interviewees, position papers, and literature, although agreeing that the problems of ISTE are vast and acute, proclaimed the importance of ISTE to the improvement of education and the life of the professional teacher.(8) Furthermore, everyone was voluble about how to improve it. At this point, things are not clear enough for us to even attempt to generate a single model of ISTE which would take into account all of the problems that must be solved for it to be effective. Rather, we must consider a series of models and utilize the variation and variety of dimensions that can exist within each model.

Thus, in this paper, we speak in some cases surefootedly, and in others quite tentatively. There is a great need for firm data about ISTE practices, trends, and alternative models, and for effective concepts and definitions that can enable education professionals and policy makers to talk effectively to one another. We believe that attention to the nature of the structure of ISTE will help develop clear definitions and communication and will generate models for improving ISTE.

STRUCTURE AND VARIATION

When we say that ISTE has structural problems, we mean that its structure is formed by several dimensions which interact with one another, and that the effectiveness of the enterprise depends on the productive interaction of the dimensions. Weakness in one dimension is magnified because it undermines the power of the other dimensions, but improvement of one dimension alone will not appreciably improve ISTE--the dimensions must be effectively meshed. Several dimensions of ISTE are seriously flawed at present, and the relationship among the dimensions is far from optimal. The general structural problem overshadows specific problems, making narrow remedies of doubtful value.

It appears at present that there are four major dimensions that take the form of systems that link together to form the operating structure

which is ISTE. The four systems are:

(1) The Governance System

(2) The Substantive System

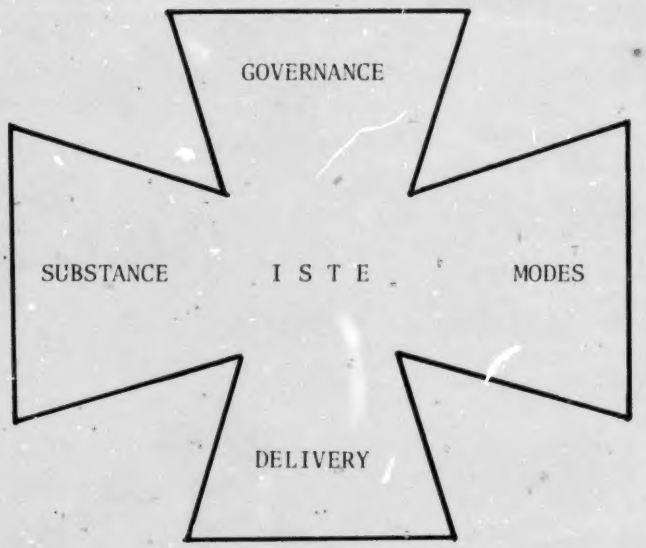
(3) The Delivery System

(4) The Modal System.

The governance system is composed of the decision-making structures which legitimize activities and govern them. The substantive system is composed of the content and process of ISTE and deals with what is learned and how it is learned. The delivery system is made up of incentives, interfaces between trainees, trainers, and training, and staff. It deals with motivation, access, and relevance to the role of the individual professional. The modal system consists of the forms of ISTE, ranging from sabbaticals abroad to intensive onsite institutes. These modes are the envelopes in which ISTE is delivered. The figure below depicts the four interlocking systems of ISTE.

Figure

THE SYSTEMS OF ISTE



Decisions (governance) result in substance (and process), modes (selected from varieties), and delivery (incentives, interfaces, staff). Thus, a school faculty, authorized by a grant from a district, may decide (governance) to develop a workshop (mode) in which mathematics is explored with a hands-on approach (substance and process) during released time, on the premises, with the teachers themselves as staff (delivery).

It is this complex structure of interlocking systems which needs to be studied and improved. Many present proposals to study ISTE are fragmentary, in the sense that they collect data about only one aspect of ISTE. If ISTE is to be improved, it must be studied as a system composed of at least four sub-systems. For example, cost and finance is only one facet of governance, and any facts about it are relatively uninformative if it is not examined in the context of other facets of governance, and substance modes, and delivery. Incentives are an important aspect of delivery, but study of incentives alone will tell us little. We must ask incentives for what, how, and under what governance system. Thus, any study aimed at changing ISTE requires exploration of the whole structure of ISTE, not merely of its parts.

GOVERNANCE AND CREATIVE COLLABORATION

Much of the recent literature on ISTE and a good deal of the activity have involved new collaborative arrangements.[9] In fact, it is fair to say that there has been greater attention to the process of organizing ISTE than there has been to a definition of substance and process. Ultimately, changes in governance and structure will not improve ISTE without a corresponding improvement in substance and process; however, it may well be that changes in the governance structure will be prerequisite to improvement in content.

A great deal of recent activity has focused on the creation of teacher centers. Yarger's position paper,[10] and his previous exhaustive report,[11] analyze the various forms of teacher centers which have sprung up recently, and the forms of governance attending them. It is clear that

the teacher center movement is large, but as Yarger points out, teacher centers have as many meanings as does ISTE itself, and thus the teacher center movement does not represent a coherent thrust around one form of governance or one particular mode of ISTE.

The entities most frequently mentioned in discussions of collaborative arrangements are local education agencies or school districts, higher education institutions, state departments of education, teacher organizations, and community organizations or representatives of the community. Generally speaking, the federal government and state education agencies are seen as providing authority and funding for ISTE, but not participating directly in collaborative arrangements. However, they may require such arrangements, as in the case of the Teacher Corps and the Urban/Rural School Development Program.[12] Legislation with respect to ISTE is presently chaotic, as Pais points out,[13] with states not having omnibus or general authority through legislation, the result being that many state and federal programs are program-specific. The position of the national leadership and most state teacher organization leaders is that ISTE should be a matter for bargaining, along with all other conditions of teacher employment. However, there is an absence of legislation in this area also.

There is a widespread feeling that all of the entities have an important place in ISTE through collaborative arrangements, but there has not been much agreement on a single type of arrangement among the myriad possibilities.[14] It is generally agreed that the role of state and federal governments should be facilitative and designed to provide general program direction, monitoring, and, selectively, money to stimulate the form of and facilitate the collaborative process. In general, the teacher organizations wish to utilize bargaining to increase the place of the teacher in the governance of the inservice enterprise.[15] In some cases, teacher organizations have begun teacher centers or participated in the governance structures of agencies set up to influence teacher education.

THE QUESTION OF OWNERSHIP AND ORPHANAGE

As the power of the degree in a credit-oriented ISTE system diminishes,

so does the hold of the school system (which has mediated credit and credential-oriented incentives) and the higher education institution (which has controlled the investment in staff and facilities) over the area.[16] As a consequence, a process which seems to us to be much like orpharage has gradually occurred.[17] Teachers are unwilling to accept the same quantities of higher education mediated instruction they have in the past and are demanding much greater control over the content to which they will be exposed. Similarly, throughout the profession, there is a desire to have increased collaboration. In our interviews, higher education faculty indicated as much of an interest in collaboration as did teachers, probably because it affects their credibility. No one wants to be rejected by his trainee--a position higher education faculty have been in for quite a few years now. Thus, the power in ISTE has gradually slipped away from the higher education institutions and local education agencies, but the newly formed collaborative agencies have not yet become coherent enough to assume the ownership of such a large enterprise, and the chaos of legislation, various bargaining arrangements, and myriad types of teacher centers has left governance in considerable disarray. No one presently owns ISTE, and no entity can speak strongly enough for it to gain that control. Clearly teachers and teacher organizations have greatly risen in their power to influence ISTE, and perhaps to control it in many ways, but they, too, have not yet developed a coherent enough thrust to be able to provide the sort of leadership that was formerly generated from the higher education institutions and school systems. The Montgomery County, Maryland ISTE program described by Marilyn Nelson,[18] for example, has not yet been duplicated in a collaborative arrangement. The powerful Los Angeles City Schools ISTE program, which offers more than eleven hundred courses to thirty thousand teachers,[19] if diminished, could not presently be replaced by an alternative structure. A much more coherent philosophy of ISTE must be developed and implemented, in which organizations are jointly responsible for the ownership of ISTE, if this vast enterprise is to be governed coherently.

FUNDING

It is clear that boards of education control money which often is mediated from the state in the form of average daily attendance stipends, and that ISTE efforts by higher education institutions have been supported not only

through tuition but by public sources as well. When one considers the various possible collaborative arrangements in which roles of teachers, community members, higher education institutions, and local education agencies are moderated by regulations and monitors at the federal and state levels, the question must be asked: Does the present funding structure permit such kinds of innovation and collaboration?

Despite the chaos in legislation and the confusion over the alternative forms of collaboration which might be generated, the answer must be: Yes. Although neither boards of education nor regents or trustees of universities can eschew their responsibility for the way money is spent, every collaborative arrangement which has so far been suggested could probably be adequately funded under existing legislation.[20] Boards of education cannot simply commission teacher organizations to operate ISTE programs without maintaining control over the quality and fiscal responsibility of the enterprise, but they can go a long way toward bringing teachers, community agencies, and others into collaborative arrangements. Under the Urban/Rural School Development Program, local education agencies receiving contracts from the federal government have been able to establish governance structures in which community members, teachers, students, consultants, higher education faculty, and technical assistants all work together to generate new patterns of ISTE without violating the authority and responsibility of the local education agency.[21] Thus, the number of possible contractual arrangements for ISTE is enormous. Although there is much discontent with ISTE funding and governance structures, it is not the system, but rather imagination and careful organization which are limited at present.

THE COMMUNITY

Increasingly, it has been questioned whether local education agencies governed by elected school boards are adequately responsive to the needs of communities,[22] especially the needs of the less affluent, minorities, the gifted, and the handicapped. There is pressure for the involvement of community members in the determination of curriculum, school organization, and inservice teacher training in ways which are not simply mediated through the elected board. In some ways, boards of education and local education authority administrators have been resistant to such pressure, feeling that it challenges their legitimacy. But it has been increasingly recognized that, while a board of education can adequately administer the fiscal and organizational superstructure of an agency, there is

probably no way a board of five to fifteen members can adequately represent the needs of all segments of a community, especially in areas with large and diverse populations. Thus, mechanisms by which residents of neighborhoods and other subcommunities within a school district can effectively share in the determination of educational affairs have begun to be created. In some communities, for example, committees have been set up which include administrators, teachers, students, and community members who share in the task of governing aspects of the education enterprise at the neighborhood level. A large variety of such arrangements currently exists, and it is clear that the trend will continue and expand. However, there is a lack of clarity about the kinds of shared governance that can be legitimized for community members. The literature on the subject is growing, but as yet there is little of the necessary clarity.

LEVELS OF GOVERNANCE

Determining the roles of the various entities involved in collaborative arrangements cannot be separated from a definition of the levels of governance which are necessary to the establishment of a coherent structure and process--whether the matter be curriculum, community relations, or ISTE. We have distinguished three levels of governance. Although these overlap to some extent, we feel that the distinctions are important to the understanding of how collaborative arrangements can function. The three levels are: (1) the authority to create and maintain an inservice unit or center, (2) the authority to govern a center, and (3) the governance of the individual teacher's relationship to a unit or center.

At the most general level is governance which embodies the authority to create, staff, and maintain an inservice training unit or center.[23] Presently, higher education institutions have the authority to create centers but not to compel attendance. Local education agencies have the authority both to create centers, or contract with higher education institutions or other agencies to create same, and to compel teachers to participate in the centers. States generally attach inservice authority to particular program functions. For example, many states provide funds to local districts to maintain bilingual education programs and stipulate that a proportion of those funds should be used for ISTE.[24] Effective collaboration among the variety of entities at the general level of governance will be accomplished through representation and a continued flow of information which makes clear the opinions of various levels of personnel about the varieties

of arrangements which are needed. One of the great deficits in the literature on ISTE is the discussion of governance separate from substance and a realistic consideration of what is necessary in order to create effective organizations. For example, a determination has to be made of the size of unit appropriate to the creation of certain kinds of training options. School districts, teachers as they work in their roles, and teachers as individuals all create needs for training which must be met by inservice units of appropriate size. Presently, some federally funded programs such as the Teacher Corps have generated large arrays of resources around the faculties of individual schools This insures that there will be a considerable impact on the school, but it is not necessarily a cost effective arrangement, because schools may not be able to take advantage of all the resources they are provided. If five or six inservice trainers are living onsite with the faculty of a school, they are certainly in a position to provide a wide variety of services, but it is questionable whether teachers can be free enough to absorb all that the trainers can give. If a unit is too small, it is difficult to provide in any economic way the resources necessary to fulfill individual needs. On the other hand, if a unit is too large, and the persons working with teachers are too far removed from the daily lives of those teachers, then their services are bound to seem irrelevant. The eleven hundred courses offered in the Los Angeles City Schools certainly provide many options for the thirty thousand teachers within the district, but many of the options are bound to seem far removed from the lives of individual teachers. Different kinds of resources are needed to deliver different types of services. A teacher who is attempting to implement a new curriculum and wishes hands-on help at various times throughout the school day wants to have a trainer who is in residence or close by and who does not have too many other teachers on his mind. Delivering this kind of personal clinical service to a teacher is a far different matter from providing subject matter knowledge. For example, knowledge about multicultural education and the materials that can be used to teach it can be conveyed in courses which may or may not be located near a teacher's place of work; but helping a teacher acquire the skill to teach multicultural education requires trainers onsite.

We also need to sort out what teachers can and cannot do for themselves. In the interviews, most categories of professionals indicated that teachers should be responsible for much of their training,[25] because they are most familiar with the problems of their own classrooms and the specific situations in which

they work. This makes a certain degree of good sense, but there are limits to what teachers can do for themselves and for one another--certain types of training require other resources. Policy at the general level thus needs to take into account the varieties of governance options that can be authorized.

The second level of governance deals with the actual operation of an ISTE center.[26] While teachers and others must be represented on the level at which decisions are made granting authority to create and fund training centers, the clients of the center can be much closer to its governance as decisions are made about the particular kinds of training to be offered and the training conditions. At this level, actual program substance and process are determined, including the options which are to be concentrated on for any given period of time. In addition, provisions can be made for "systems" needs, that is, those needs that arise from changes in curriculum and school organization and those having to do with the competence of individual teachers. Here the varieties of ISTE are undertaken, the requisite staff is organized, and arrangements are made for interfacing training options with the needs of teachers.

The third level of governance is governance of the individual teacher.[27] The literature on ISTE includes much discussion of the first two levels of governance, but little on the third, which is equally important and must be included in the creation of any operating entity. Governance at this level has to answer the question of how individual teachers relate to training options. Quite clearly, however attractive an option may be, if teachers do not desire it, the option is in difficulty. This situation gives rise to such issues as to what extent personal interests should be taken into account, to what extent an individual should be accountable to judgments by peers that he needs training of a certain sort, to what extent the individual needs to be responsive to diagnoses by supervisors, principals, and others responsible for the local education agency, and to what extent individuals should be required to participate in ISTE programs that relate to thrusts within the school or community.

ISTE needs to be organized in such a way that individual teachers can perceive its importance in their lives. It is probably not unreasonable to expect that a portion of inservice training should be optional according to personal feelings, part should be determined by diagnosis of a teacher's particular competence in the roles played, and a portion should be determined by systems needs or thrusts. To create inservice centers as if only one of these sources of need was operating could be a serious mistake. Eventually, comfortable

arrangements must be worked out in which these sources of direction are blended in such ways that they do not conflict with one another.

THE MODAL DIMENSION

ISTE can take many forms, although it is frequently discussed as if it were an undifferentiated mass. It appears that much otherwise useful substance is placed in inappropriate forms or contexts at present. The review of the literature suggests five general modes, or contexts, for ISTE: (1) job-embedded, (2) job-related, (3) credential-oriented, (4) professional organization-related, and (5) self-directed. Each context implies a corresponding role for the teacher. Thus, the teacher may be seen respectively as: (1) an employee of a school, (2) a colleague of other teachers, (3) a student of higher education, (4) a member of a profession, and (5) an individual craftsman.[28]

The proposed categories do not necessarily represent philosophical or psychological orientations to ISTE, nor are they intended to be mutually exclusive. It is not being suggested that one can, by examining them, arrive a priori at a decision as to which is best. Each context or mode has certain advantages, and each requires different arrangements for its implementation.

THE JOB-EMBEDDED MODE

In performing the task of teaching and interacting informally with other teachers, one learns more about teaching; however, the learning that occurs in such a way is random and difficult to measure. Since most teachers work where other teachers also work, situations are presented in which job-embedded ISTE programs could easily be structured and planned.

There are four typical modes of job-embedded inservice training: committee work for program planning and organization, team teaching, interaction with consultants, and professional reading and curriculum analysis. The majority of committee work is related to curriculum planning and exposes teachers to alternative ways of handling curriculum, various instructional materials which can be adopted, and teaching strategies employed by other teachers. Team teaching provides the opportunity for observing and interacting with other teachers, and for relatively close-order clinical analysis of one's teaching.[29] Use of consultants and professional reading are somewhat less directly related to the act of teaching. Consultants can provide exact models for teachers by demonstrating methods with

the same children with whom a teacher works, using the same materials. They can then discuss with the teacher problems the teacher is having in using the particular method. Consultation can be mandatory or voluntary, pre-established or variable in content, provided at regular intervals or as needed. The literature on ISTE indicates that consultation should be decentralized and individualized, that is, determined by the teacher himself. Teachers probably do little professional reading. They frequently return general curriculum and instruction methods books used in their courses rather than keep them as references, and they rarely turn to reference works in preparing lessons or examinations. Stronger school libraries for teachers would be a useful first step toward greater utilization of reading as a job-embedded mode of ISTE.

Surveys of teacher attitudes and comparative studies of inservice alternatives indicate a strong preference on the part of teachers for types of inservice that can be completed at school during school hours. Committee work and team teaching, for example, are primarily byproducts of a regular school activity, an attribute which is perhaps the essence of the job-embedded mode of ISTE. The teacher is not required to go off site, receives training during school hours, and performs only his regular tasks. The value of job-embedded training lies in its unity with the teacher's job and the economy of accomplishing several purposes at once.

THE JOB-RELATED MODE

The job-related mode of inservice includes training that is not strictly a part of the teacher's job. The most important traditional type of job-related training and the most widely used form of inservice aside from college courses is the workshop. A workshop consists of a group of teachers working together, with a leader and perhaps some resource persons, on problems the group is interested in solving. Among the drawbacks to workshops are that they are held after school hours or on the weekend, may be conducted away from school, are often dictated from above, and often are not responsive to teacher's needs. Other job-related activities are teacher exchanges and visits, in which teachers observe other teachers in action and see how other schools operate.

Recent job-related training approaches include teacher centers and training packages,[30] which promote the basic idea that teachers should be able, on their own initiative and at their discretion and convenience, to go to a place at or near their school where they can interact with their colleagues and engage

in supplementary training. A variation of the teacher center is mobile computer-assisted instruction, in which a traveling van with computer terminals provides instruction to teachers in small districts or remote areas at their convenience and pace.

THE CREDENTIAL-ORIENTED MODE

Until very recently, by far the most pervasive mode of ISTE was the orientation toward acquiring professional credentials. This context is very similar to preservice training in that the teacher is cast as a student of higher education who takes courses and perhaps pursues a degree. However, both the literature and our survey of teachers have revealed that college courses have little relevance to ISTE.[31] This may be because college-based programs are too often undertaken as an end in themselves and are not related to the specific goals of improving teachers' classroom performance. Nevertheless, the current structure of the teaching profession is oriented toward college credits. Receipt and renewal of professional certification, salary increments, and working in nonclassroom jobs, such as administration, supervision, and specialties, are all often dependent upon the completion of a course of study offered by higher education institutions or other courses accredited by school districts or states. States and school districts have attempted to promote this type of professional development by lowering or waiving tuition for teachers. The resources, expertise, and detachment from immediate classroom problems of higher education institutions are undeniably necessary to the initial and continuing preparation of teachers. But new arrangements, in which schools and universities share the responsibility for training, are needed if ISTE is to be more relevant to the concrete needs of teachers.

THE PROFESSIONAL ORGANIZATION-RELATED MODE

The collective of teachers represents both a labor union and an organized profession. Like labor unions, teacher organizations concern themselves with such issues as salaries, fringe benefits, grievance procedures, and job security. Increasingly, however, teachers want to be thought of as professionals, and one characteristic of a profession is that it takes upon itself the responsibility for controlling and maintaining the quality of its membership. If teachers are seriously committed to attaining professional stature, then they must recognize and fulfill their collective responsibility for inservice training.

Professional organizations of teachers have been established around most of the curriculum areas and in several other areas of common interest. They sponsor training opportunities such as conventions and workshops. Some school districts will pay teachers' travel and expenses to attend such events. Publishers have often subsidized such efforts, partly as a means of presenting their materials. Specialized professional journals serve to keep teachers informed on current developments in their areas of interest.

Professional organizations are beginning to become involved in ISTE in a more comprehensive manner than providing the types of services mentioned above. Several national and state organizations have conducted surveys to find out what needs to be done, and the American Federation of Teachers and the National Education Association have proposed models for teacher-run teacher centers.[32] Some associations are even getting into the training product business in the belief that a specialized association can lend its collective practical expertise to the research and development enterprise. In one rather revolutionary project sponsored by the NEA, teachers have been solely responsible for an ISTE program from its conception and design all the way through its evaluation, in accordance with the belief that teachers and teacher organizations are responsible for the reform of teacher education and that such responsibility should be fixed through negotiated agreements. The AFT has suggested an inservice plan which would be achieved through negotiated contracts but, in contrast to the NEA project, it would be based on the individual teacher's self-diagnosis, self-development, and self-evaluation, rather than on a collective approach. In addition to providing inservice training, teaching assignments and recruitment and selection of teachers would also be covered by the AFT's "Continuous Progress Approach" plan.

THE SELF-DIRECTED MODE

This approach to ISTE assumes that there are certain needs for professional development that the individual teacher himself can best understand and fulfill. The teacher is seen as a self-motivated craftsman or professional who is interested in maintaining the currency of his skills and knowledge, either because what he is learning will be directly applicable in his classroom or simply because he wants to keep abreast of developments in his field for his personal satisfaction. In this context, motivation and direction for learning come from the teacher, but certain enabling factors--time, money, educational

resources--must be provided either by schools or higher education institutions. The self-directed mode of ISTE includes such variations as released time with pay to pursue training, sabbatical leaves, general continuing education courses not connected to a degree or credential, and professional reading. Surveys have found out that, among the self-directed alternatives, teachers generally prefer released time--for workshops, conferences, research, independent study, travel, field trips, demonstrations--and the American Federation of Teachers strongly favors released time.

There is obviously a large variety of available modes of ISTE, but some, which could potentially satisfy common complaints about ISTE, are underused. For example, job-embedded modes can offer relevant training to teachers, but teachers are either unaware of such modes or do not use them much, for a frequent complaint in the literature, interviews, and position papers is that training is irrelevant to teachers' needs and jobs. Other modes will have to be modified in order to better meet current needs of teachers. Credential-oriented modes, for example, are in need of modification to better serve teachers' needs today. Thirty years ago, nearly half of all teachers in service did not have bachelor's degrees, whereas today many have master's degrees, or the equivalent, and some even have doctorates. During the 1950's, teachers often engaged in credential-oriented modes of inservice training to increase their salaries or advance in the profession. This is easy to understand, since, at that time, the entire educational system was expanding at a very rapid rate and there were many opportunities for teachers to become principals, guidance counselors, subject specialists, and so on. By contrast, today many school systems have a backlog of persons possessing credentials which qualify them for advancement in the profession. Consequently, the credential-oriented, salary and degree incentive system has lost much of its force and is in disrepute as an ISTE training mode. It seems to us, however, that much of the heat which is generated about this may be unnecessary. In a relatively mature profession, when too many persons have advanced degrees and quantities of graduate instruction, the time is clearly present for instituting a different kind of system and probably a different kind of instruction as well. The inadequacy of ISTE training modes may not be due so much to poorly qualified higher education faculty, or the confounding of supervisors with the evaluative process, as to the fact that the profession itself has changed.

Not only have more teachers achieved degrees and graduate level credits but, in general, they are also much more experienced today.[33] A lot of the types

of basic instruction that teachers were willing to accept, and even hungry for, twenty years ago are now much less needed and desired. This report's senior author remembers clearly how grateful he was for help in organizing his classroom twenty years ago, as he fumbled around trying to learn how to teach. Then, a supervisor could seriously discuss with him the best arrangements for the science center or the library corner, and the like, whereas today two similar persons would be embarrassed to have a conversation over that same topic. Teachers who have taught ten years or more, as is often the case today, are likely to know as much about tricks of the trade as are professors and supervisors of twenty years' experience. There simply is a limit to the amount of basic training which can be given effectively. Yet higher education institutions and the supervisory staffs of schools have apparently persisted in offering basic instruction to a profession which is ready for advanced instruction. Before ISTE programs will be improved, current needs of teachers--both professional and personal--will have to be taken into account and presented in modes which are both appropriate to the subject matter and acceptable to teachers.

DELIVERY SYSTEMS

By delivery,[34] we refer to three factors. One factor is incentives, which are designed to provide motivation to individuals to participate in ISTE. Traditionally, credentials have been the primary motivation, with additional incentive in the form of salary increments attached to the credentialing or course accumulation process. This system is under heavy fire at this point, largely because it is tied to university courses which teachers perceive as relatively distant from their daily work. The second delivery factor is the interface, or bringing together, of teacher and training. Possible interfaces vary greatly, depending on the training mode. In the job-embedded modes, teachers are very close to the governance and instructional processes, and it is relatively easy to have a close interface between the teacher and trainer. The greater the distance from the teacher's work site, the more difficult it is to have a continuous interface between all aspects of the training and the job functions of the teacher. Staff is the third delivery factor. Nearly all role groups agree that many current inservice trainers are somewhat irrelevant to the training process, although it may be that this perception is due in part to the kinds of conditions under which inservice work is presently taken. Teachers are favored by

most of the role groups as the appropriate staff for at least part of the training, but there is an enormous pool of other personnel who could also participate in the staffing of inservice programs.

INCENTIVES

Incentives for participation in ISTE programs should at least be neutral. At present, many inservice courses and workshops are inconvenient because they require teachers to travel great distances, are held after school hours or on weekends, and are irrelevant to teachers' needs. Incentives should contribute willingness to participate in the process, thereby easing participation. It is our impression from the interviews, position papers, and literature review, that money is not as important as time in the provision of incentives.[35] Teacher organizations argue for "prime time" ISTE--in other words, training that occurs during teachers' regular work hours. This is much easier to ask for than to deliver. In addition, many teachers do not wish to be released for inservice activities unless they are certain that adequate support is developed in their school so that they will not return to a chaotic situation created by "substitutes" of the old-fashioned type. Thus, teachers need to be not only physically released from their normal duties but also mentally released from the worry that their classroom will not proceed productively without them. The alternatives for providing both types of released time are many. Schools can, in a sense, be staffed with additional personnel whose business it is to help others when they are released for training. For example, team teaching can provide greater opportunity for released time than teaching individually can.[36] Maintaining cadres of experienced staff who can release teachers on a systematic basis is another alternative which can aid in the provision of sufficient incentives for teachers to motivate them to participate willingly in ISTE activities.

INTERFACES

The delivery of ISTE involves providing access between the needs of teachers and other professional staff and the possibilities for types of instruction they might receive. Interfaces should provide a smooth meshing of the roles of the teacher in the classroom, the thrusts of the district, the individual needs of the teacher, and the demands that arise from colleagueship.[37] The varieties of ISTE discussed in the section of this report on the modal dimension obviously provide many alternative interfaces, and each type of delivery can, if

properly handled, interface adequately with the individual teacher. Interfaces should provide for the teacher incentives which make the training seem reasonable in terms of his personal lifespace, contact with training in settings which are appropriate to the training substance, and, finally, training staff who are in a situation such that they can help the teacher act on what he is taught. In other words, it appears to be insufficient to permit transfer of training to be the responsibility of the teacher alone, something he simply accomplishes as he carries out his various roles as a teacher. Rather, teachers need assistance in the form of feedback and collegiality in incorporating new elements received from training into their teaching repertoire.

STAFF

A theme that runs throughout the current literature on ISTE and the opinions of practitioners is the decreasing acceptability of higher education faculty and supervisory employees of local education agencies as trainers in IST programs.[38] As in other areas of discontent with ISTE, relevance and continuity stand out as key issues. There is a general suspicion of anyone who does not relate fully to the world of teaching and to the role-related need for relevant and readily available trainers. Combining the pool of teachers themselves with the cadres of traditional inservice staff would constitute a vast reservoir of talent which an appropriate structure should be able to deploy in a very flexible way. Even in a small school district--one employing fewer than a hundred teachers--there are about one hundred twenty persons, exclusive of higher education personnel, who could be employed as an inservice staff for the varieties of training options. In a medium-sized school district in a large metropolitan area, the number of potential staffing resources is dizzying. It is clear that effective structures can be created in which the available personnel are employed as appropriate in a variety of inservice trainer roles.

Complaints about inservice staffing may not always indicate actual staff problems. It is our impression that in complaining that they are taught by irrelevant personnel, teachers are partly complaining about the circumstances in which they meet those personnel. If an ISTE course is held two hundred miles from one's work site and concerns an abstract issue, it is likely that no category of personnel will be seen as relevant staff. Even if a course is held at a distance, if the subject matter is of interest to teachers and adequate followup is provided teachers in the classroom, participants will be more likely

to feel trainers are relevant. Continuous ISTE programs need to be designed in which needs are mutually defined by teachers and schools and a variety of staffing options are developed which identify some staff who are better at presenting content and others who are better at, and better placed, creating followthrough in the school district situation. The implementation of such programs might solve many current problems in ISTE.

The key to delivery appears to be what the American Federation of Teachers calls continuous inservice education. Teachers, the AFT feels, are critical of courses and workshops partly because there is little followup in the classroom; that is, teachers feel they need an integrated complex of activities so that, in addition to being introduced to a new approach or idea and seeing it demonstrated, they are given classroom followthrough that permits personal exploration of and provides assistance in trying out the new approach or idea. Marilyn Nelson points out that even the Montgomery County, Maryland ISTE program, with its considerable resources, has to constantly guard against bringing in consultants who fly in to "do their number" and then leave without providing adequate followup. Although the need for interfaces to make ISTE relevant has led teachers and teacher organizations to feel that ISTE ought to be held largely onsite, with teachers themselves and other professional staff as the trainers, what is probably more the heart of the matter is the concept of continuousness. It is possible to imagine teachers taking a course in a location far removed from their own situation and yet receiving onsite the kind of support necessary to enable them to implement the training they have received elsewhere. A variety of projects in one of California's present programs releases teachers for a month of intensive training, after which the staff of the training institute follow the teachers back into their schools and work with them onsite, helping them not only to implement the substance and processes that have been introduced but also to learn to be their own instructors. The drawback of this type of continuous training is that more time and money may be required for training offsite than would be required for onsite training. Thus, continuousness is also a matter of incentives--teachers must be motivated to participate in training, whether it be on or offsite.

An effective ISTE delivery system must match the variety of training with teachers' needs and appropriate staffing. It provides continuousness, or meaning, in terms of the roles a teacher plays: interfaces that mesh teachers' needs with training, incentives to motivate teachers to participate enthusiasti-

cally in training, relevant staff, and followup in the classroom. The best delivery systems will be those in which a collegial atmosphere is developed within the school so that teachers continuously study their teaching in ways which meet their needs, continuously reflect on the products of their study, and continuously are provided followup to the study in their own classrooms.

THE SUBSTANTIVE DIMENSION

As indicated earlier, substance refers both to the content of training and the process used to deliver content--what is learned in any education setting is what is taught and how it is taught.[39] For example, many of our position paper writers believe that ISTE should model the kind of educational situation teachers and others receiving training will be expected to create in their own classrooms and the types of relationships they will be expected to maintain with the children they teach. The reason for this is not simply consistency. It reflects also the belief that the best way to teach process is to model it.

The interviewees were much less specific and clear about substance and process than any other aspect of the structure of ISTE.[40] In part, this is probably because it is very difficult to speak to general substantive needs, since such needs grow out of the particular roles educators play in the lives of children, schools, and communities,[41] and therefore to attempt to state what substantive needs exist across the nation would be impossibly complex. However, even when teachers were asked what their personal priority needs were, the conversation became much less specific and positive than it was when they talked about the problems of ISTE in general. Clearly, the substantive needs of educators are vast and various. There is substance in all the subject areas, including the specialties, such as physical education, special education, and the like, and there are teaching methods which are peculiar to each of the areas. Furthermore, teachers have not only organizational and interpersonal needs, but also both personal and professional self-management needs.

One of the most important types of decisions to be made about inservice training is the kind of substance that will be taught and the process to be used in teaching it. The interviews, position papers, and literature all reveal an agreement that much of ISTE contains substance which is irrelevant to the needs of classroom teachers. However carefully governance structures,

delivery systems, and training modes are developed, without adequate substance and process, training will be empty.

PROCESS

In previous work,[42] four families, or approaches, to the teaching process have been identified, representing the available repertoire both for teacher training and for working with children. The four families of approaches are: (1) social interaction, (2) information processing, (3) personalistic, and (4) behavior modification.

In emphasizing the relationships of an individual to society as a whole and to other individuals, social interaction approaches to teaching reflect a view of human nature which gives priority to social relations and the creation of a better society. With respect to goals, models from this orientation aim toward the improvement of an individual's ability to relate to others. Many social interaction models have developed from a desire to improve democratic processes and to educate students concerning ways to better society. This orientation does not assume that the area of social relations is the only important dimension of life. Social theorists are just as concerned with the learning of academic subjects as they are with the development of the mind and the self in relation to society. Some, of course, have developed models designed specifically for the improvement of social interaction or have used social interaction as the primary vehicle for education; but it is the rare educational theorist who is concerned only with one aspect of a learner's development or uses only one facet of the environment to influence that development.

Information processing sources, the second large family of models, are oriented toward both the information processing capability of the student and systems by which the student can improve this capability. Information processing refers to the ways people handle stimuli from the environment, organize data, sense problems, generate concepts, solve problems, and employ verbal and nonverbal symbols. Some of these models are concerned with the ability of the learner to solve specific kinds of problems; other types of models concentrate on creativity; others are concerned with general intellectual ability; and still others emphasize the teaching of specific strategies for thinking. Nearly all models from this family share a concern with social relationships and the development of an integrated, functioning self, but their primary concern is the development of the student's capacity to integrate

and process information and helping him learn to use systems--especially academic ones--that can help him process data.

The third family of models, those with personalistic approaches, views the individual person as the source of educational ideas and emphasizes the processes by which an individual constructs and organizes his reality. Frequently focusing on psychology and the emotional life of the individual, these models are directed toward a person's internal organization as it affects relationships, particularly the human capacity to reach out, make contact with others, and venture where one has not been before. Other personalistic models are oriented more toward an individual's feelings about himself, and some are concerned with helping the individual develop an authentic, reality-oriented view of himself and his society. As with the other families of models, this one is not exclusive in its orientation. Most personalistic models which are oriented around the development of the self are also concerned with the development of social relationships and information processing skills. The distinctive feature of personalistic models is the emphasis on personal development as a source of educational ideas. Hence, while the focus is on helping the person develop a productive relationship with his environment and a view of himself as a capable person, it is expected that other products of these models will be richer interpersonal relationships and a more effective information processing capacity.

The fourth grouping--behavior modification sources--has evolved from attempts to develop efficient systems for sequencing learning attitudes and shaping behavior by manipulating reinforcement. Students of such reinforcement theorists as B. F. Skinner have developed these models, using operant conditioning as their central procedure. The term "behavior modification" has been applied to these efforts because they rely on changing the student's external behavior and describing him in terms of extremely visible, rather than underlying, unobservable behavior. Operant conditioning has been applied to a wide variety of educational goals, ranging from military training to interpersonal behavior and even to therapy. Its general applicability has led to its use in many domains of human behavior which characterize the other families of models.

Any approach to ISTE can utilize one or more of these families of models of teaching, taking care that the models selected for use are appropriate to the content to be dealt with. For example, human relations content can probably best be facilitated by social interaction models of teaching, whereas

science would probably best be facilitated by information processing models. In either case, however, the other models could be appropriate. It would seem possible for ISTE to adopt models of teaching which will exemplify to the teacher the ways he is expected to teach. If teachers are taught by models which are appropriate to a particular curriculum plan, for example, they will surely learn both the plan and the process of teaching it more effectively and see it from more perspectives than if they were taught by other, less appropriate models.

CONTENT

Social change and fresh conceptions in education have generated a variety of new needs which need to be addressed by ISTE.[43] We will discuss here three areas that are of a particular contemporary interest. One of these is multicultural education; a second is the education of the handicapped; and a third is early childhood education. During the study of ISTE concepts, these needs were addressed in the position papers and dealt with in the interviews.

Multicultural education is an extension of the concept of cultural pluralism in education. In part, the contemporary movement toward multicultural education is a reaction against the homogenizing "melting pot" concept which dominated the early years of the common school. A simultaneous effort is attempting to integrate the schools and thereby use the education system as a meaningful device for integrating society. Boyer's paper[44] on the special problems for schools which are due to integration is largely about multicultural education, which he believes is the appropriate response to integration efforts. We tend to agree with Boyer when he says that the response to questions about integration is not simply a matter of explaining to children why they are being integrated and then carrying on business as usual; rather, integration requires the creation of schools which are themselves multicultural in nature. Educators, such as Boyer, as well as other people, have become concerned with preserving the heritages of the subcultural groups in the United States and adapting the education system to the community and the child as they are, rather than deleting from them cultural and individual differences. Multicultural education, especially when it is accompanied by an attempt to create a bi- or multilingual educational setting, creates enormous inservice needs. As Boyer, Ashworth,[45] Whiteman,[46] and Brizzi[47] point out in their position papers,

most adult Americans have great difficulty reaching across cultural barriers. Not only is it very difficult for teachers of any one racial, ethnic, or cultural background to reach children of another background, but, perhaps even more important in a broad sense, this makes it difficult to develop a genuine cultural pluralism in schools. In a sense, the problem of ISTE in this area is to try to insure that the blindness of the one generation is not visited on the next. Multicultural education does not imply simply reaching the individual differences of children that are due to cultural differences; a much greater goal of multicultural education is to strengthen the base of our pluralistic society and help all persons reach out to one another.

Teachers have to be models of multiculturalism in order to achieve the goals of this type of education, and learning to be such a model is obviously not accomplished quickly or easily for most of us. An inservice course or two, or the establishment of a bilingual center in schools, will not, by any means, suffice. Generally speaking, multicultural education appears to be a relatively undeveloped area, despite the recent attention it has had. Most thrusts in multicultural education have occurred in those geographic areas where several cultures obviously come together to whom the schools must relate, as, for example, in the Southwest, the South, or Northern and Midwestern cities where "visible" minorities have gathered in quantity. But a pervasive nation-wide thrust in multicultural education for all children has not yet developed, and the problems of establishing it will be considerable.

Another area of special importance currently in ISTE is the attempt to provide "handicapped" children with the least restrictive alternatives in schooling. This movement, often called "mainstreaming,"[48] is very complex. Except in the case of persons with severe physiological handicaps--and only a tiny percentage of all handicapped children are included in this category--there are relatively few strategies designed uniquely for teaching the various populations of handicapped children. With respect to most handicapped children, the problem is very similar to that of multicultural education: Unless these children are welcomed with their differences and their special individuality is capitalized on, handicapped children may feel, and in fact are, deprived of acceptance by the "mainstream" culture. Accomplishing the feeling of acceptance in these children is not easy. Children with learning handicaps tend to approach academic areas feeling defeated before they start, and much of the substance of education continues to be academic mastery. Emotionally

disturbed children are particularly disadvantaged because severe emotional disturbances tend to disrupt the normative social system of classrooms, and these children therefore receive disapproval in many educational settings. Physically handicapped children are disadvantaged because most regular classrooms are not designed to accommodate their special physical needs. Thus, mainstreaming really involves a change in the atmosphere of the school, its organization, and the type of community that is developed within it.

Like multicultural education, mainstreaming represents an area which requires massive and pervasive inservice education, for which no small set of workshops or other activities will suffice. Both multicultural education and the education of the handicapped are technically difficult areas for teachers, and presently there are relatively few qualified persons available to work with teachers in the acquisition of the knowledge and skills needed to teach in these areas. Nor is there a pool of teachers who can conduct ISTE courses for their peers, as in other areas. As desirable as it may be for much inservice education to be carried on by teachers for teachers, in these two areas the profession has the smallest reservoir of persons presently able to operate effectively. Consequently, if teachers are to become trainers of other teachers in multicultural education and the education of the handicapped, those who would train others need themselves to receive considerable amounts of inservice education before they will be able to function effectively in trainer roles.

The third change which is presently affecting the school strongly is the early childhood education movement, especially efforts to draw into the education system children below the level of the present kindergartens.(49) Early childhood education creates two types of inservice problems. The first is that many teachers who are presently working with older children may, with the shrinking school population, be reassigned to work with younger children, and are likely to need considerable amounts of inservice education, especially onsite clinical training, to help them learn how to work effectively with younger children. Conversely, many persons presently working in nursery schools and day care centers, although having experience working with younger children, may have much less broad training as teachers than do persons presently in service above that level. Thus, the second problem for ISTE is that these people will need to be integrated into the community of teachers.

All of these special and contemporary issues illustrate how changes in the society generate changes in the schools, thus bringing inservice needs for

teachers from outside the profession itself.[50] The roles of teachers are subjected to pressures which require them to change if they are to respond to individual and social needs at a high professional level. The more such sources generate needs which are not traditional with teachers' roles or activities, the more difficult it is for teachers to respond in a smoothly flowing fashion, and the greater must be the efforts in inservice education. Judging by the interviews, many teachers are not aware of the special needs of multicultural education and many are resistant to mainstreaming.[51] This is not really surprising, but it illustrates that teacher organizations, state departments of education, and higher education institutions, or their equivalents, are necessary to counterbalance the tendency of teachers to conceive of inservice needs solely in terms of present roles rather than considering emergent roles as well.

These three areas are illustrative of the new types of content which seem to be high priority areas for ISTE at present, but they certainly would not provide all of the content for which teachers have needs. Probably any large-scale program of ISTE needs to represent a range of content and a variety of models of teaching so that teachers can select the content and processes most suited to their needs and most important in their present and emergent roles as teachers.

SUMMARY

Much information is needed about each of the four dimensions of ISTE in order to increase their productive interaction with one another. Collaborative governance structures need to be explored and created which will result in decisions about the substance, modes, and delivery of ISTE. As indicated earlier, many present attempts to improve ISTE deal only with one aspect of one dimension of the overall structure of ISTE. For example, new incentives are provided, new governance structures are initiated, new substance is introduced into the system, or a new mode of training is instituted. But there are few attempts to introduce complementary changes into each of the four dimensions simultaneously. This lack of concurrent attention to all of the dimensions hinders the creation of strong programs of ISTE.

What is encouraging at present are the vast numbers of varieties and interface possibilities available for the governance, modal, delivery, and

substantive dimensions of ISTE. In the present literature, the minds of the position paper writers, and the opinions of the practitioners and policy makers who were interviewed, there are more than enough varieties presently available in each dimension to permit vast improvements in the structure of ISTE, without necessitating any inventions. In the future, models of inservice teacher education should take account of all four dimensions of the structure of ISTE, selecting from the vast number of attractive options. Attempts to gather further information about ISTE therefore need to explore its structure more fully and examine the dimensions as they relate to one another. For example, study of the dimensions may reveal that various kinds of incentive systems make certain varieties of training more attractive, and that certain varieties and interfaces increase the possibilities for continuous inservice education over more kinds of substance and process. The preferences of teachers and other practitioners, as well as those of policy makers, about the alternatives in ISTE need to be ascertained in order to lay a base of knowledge from which the preferred options can be selected. The number of options is so large that this will not be easy. However, the task is feasible, and it will result in a basis on which we can begin to experiment with many potentially attractive models of ISTE.

REFERENCE NOTES

For further discussion of the issues presented in this report, see the four source volumes in the ISTE series, and other sources, as referenced below.

(1) "Feelings about the Overall Enterprise of Inservice Teacher Education," "Skepticism," Report II: Interviews, pp. 13-17, 63.

(2) "Who Should Be the Trainers?" Report II: Interviews, pp. 45-46.

(3) "Preferences for Training Objectives," "What Should Training Consist Of?" "Interface," "Relevance," Report II: Interviews, pp. 31-33, 47-48, 51-52, 63.

(4) "The Roles of the Entities," "Organization of ISTE," Report II: Interviews, pp. 19-30, 63-67.

(5) "Natural and Planned Variations," Report II: Interviews, p. 56; "Approaches to the Structure of Inservice Teacher Education," Report III: Literature, pp. 22-23.

(6) "A Problem of Language and Concepts," Report II: Interviews, pp. 15-16; "Definitions of Inservice Teacher Education," Report III: Literature, pp. 78-89; David D. Marsh, "Re-examining the Definition and Scope of In-service Education," Report V: Cultural Pluralism and Social Change, pp. 89-114.

(7) "The Varieties of Inservice Teacher Education," Report III: Literature, pp. 4-24. pp. 4-24.

(8) "Value Orientations toward Inservice Education," Report III: Literature, pp. 57-78; "How Necessary Is ISTE?" "Comments on the Importance of ISTE," Report II: Interviews, pp. 14-15, 62.

(9) "Collaborative Arrangements," Report III: Literature, pp. 33-56.

(10) Sam J. Yarger, "An Exploratory Model for Program Development in Inservice Education," Report IV: Creative Authority and Collaboration, pp. 6-32.

(11) Allen J. Schmieder and Sam J. Yarger, "Teacher/Teaching Centering in America," Journal of Teacher Education, XXV (Spring 1974), pp. 5-12; Sam J. Yarger, Andrew M. Lebby and Norma Edwards, "A Structure/Function Typology for the Analysis of Teaching Centers," unpublished manuscript, Syracuse University, Syracuse, New York, 1974.

(12) Richard P. Mesa, "Implications for Inservice Education of the Urban/Rural School Development Program Experience," Report V: Cultural Pluralism and Social Change, pp. 52-68.

(13) Ralph M. Pais, "Inservice: Legislation and Legal Issues," Report IV: Creative Authority and Collaboration, pp. 115-125.

(14) "The Roles of the Entities," "Organization of ISTE," Report II: Interviews, pp. 19-30, 63-66.

(15) Robert D. Bhaerman, "A Brief Statement of the AFT's Views on In-service Education;" David Darland and Robert Luke, eds., "The NEA's Views on In-service Education," Report IV: Creative Authority and Collaboration,

pp. 138-142, 143-155.

(16) "Incentives and Conveniences," "Incentives," Report II: Interviews, pp. 35-41, 67-68; "Incentives," Report III: Literature, pp. 92-93.

(17) "The 'Ownership' of Inservice Education," Report II: Interviews, pp. 52-53.

(18) Marilyn Nelson, "Creating Organizational Structures for the In-service Training of Teachers," Report V: Cultural Pluralism and Social Change, pp. 71-83.

(19) Bruce R. Joyce, "Case Studies of Large-scale Programs: Persistent Issues," Report V: Cultural Pluralism and Social Change, p. 2.

(20) "Preference for Alternative Fiscal Arrangements," "Cost and Finance," Report II: Interviews, pp. 55, 67.

(21) Richard P. Mesa, "Implications for Inservice Education of the Urban/Rural School Development Program Experience," Report V: Cultural Pluralism and Social Change, pp. 52-70.

(22) Bruce R. Joyce, "Case Studies of Large-scale Programs: Persistent Issues," Report V: Cultural Pluralism and Social Change, pp. 2-9.

(23) Kenneth R. Howey, "Minneapolis Public Schools/University of Minnesota Teacher Center: In-service Training for Open Classroom Teachers," Report IV: Creative Authority and Collaboration, pp. 62-95.

(24) Ralph M. Pais, "Inservice: Legislation and Legal Issues," Report IV: Creative Authority and Collaboration, pp. 115-125.

(25) "Issues About Training," Report II: Interviews, pp. 42-51.

(26) Kenneth R. Howey, "Minneapolis Public Schools/University of Minnesota Teacher Center: In-service Training for Open Classroom Teachers," Report IV: Creative Authority and Collaboration, pp. 62-95.

(27) Marilyn Nelson, "Creating Organizational Structures for the In-service Training of Teachers," Report V: Cultural Pluralism and Social Change, pp. 71-84.

(28) "The Varieties of Inservice Teacher Education," Report III: Literature, pp. 4-32.

(29) Marsha Weil, "Oversupply as Opportunity: An Exploration of Job-sharing and Inservice Education," Report IV: Creative Authority and Collaboration, pp. 103-114.

(30) Sam J. Yarger, "An Exploratory Model for Program Development in Inservice Education;" Kenneth R. Howey, "Minneapolis Public Schools/University of Minnesota Teacher Center: In-service Training for Open Classroom Teachers," Report IV: Creative Authority and Collaboration, pp. 6-32, 62-95; "Teacher Centers and Consortia," Report III: Literature, pp. 49-52.

(31) "Issues About Training," "Participation in ISTE," Report II: Interviews, pp. 42-51, 67.

(32) Robert D. Bhaerman, "A Brief Statement of the AFT's Views on In-service Education;" David Darland and Robert Luke, eds., "The NEA's Views on In-service Education," Report IV: Creative Authority and Collaboration, pp. 138-142, 143-155.

(33) "Educational Experience," Report II: Interviews, p. 4.

(34) Sam J. Yarger, "An Exploratory Model for Program Development in Inservice Education," Report IV: Creative Authority and Collaboration, pp. 6-32.

(35) "Incentives and Conveniences," "Incentives," Report II: Interviews, pp. 35-41, 67; "Incentives," Report III: Literature, pp. 92-93.

(36) Marsha Weil, "Oversupply as Opportunity: An Exploration of Job-sharing and Inservice Education," Report IV: Creative Authority and Collaboration, pp. 103-114.

(37) "Interface," "Relevance," Report II: Interviews, pp. 51-52, 63; Marilyn Nelson, "Creating Organizational Structures for the In-service Training of Teachers," Report V: Cultural Pluralism and Social Change, pp. 71-84; Robert D. Bhaerman, "A Brief Statement of the AFT's Views on In-service Education," David Darland and Robert Luke, eds., "The NEA's Views on In-service Education," Report IV: Creative Authority and Collaboration, pp. 138-142, 143-155.

(38) "Who Should Be the Trainers?" "Roles of LEA's and IHE's," Report II: Interviews, pp. 44-47, 64-65; "The Varieties of Inservice Teacher Education," "Collaborative Arrangements," "Definitions of Inservice Teacher Education," Report III: Literature, pp. 4-32, 33-56, 57-90.

(39) "The Varieties of Inservice Teacher Education," "Definitions of Inservice Teacher Education," Report III: Literature, pp. 4-32, 57-90.

(40) "The Definition of Substance," "Structure and Substance of ISTE," Report II: Interviews, pp. 30-35, 68-69.

(41) Richard M. Brandt, "The Child Study Movement," Report V: Cultural Pluralism and Social Change, pp. 10-51.

(42) Bruce Joyce and Marsha Weil, Models of Teaching. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1972.

(43) David D. Marsh, "Re-examining the Definition and Scope of In-service Education," Report V: Cultural Pluralism and Social Change, pp. 89-114; "Definitions of Inservice Teacher Education," Report III: Literature, pp. 57-90.

(44) James Boyer, "Inservice Training and Multi-cultural Education," Report V: Cultural Pluralism and Social Change, pp. 33-61.

(45) Margaret C. Ashworth, "Helping Teachers Adjust to Students Whose Backgrounds Differ from Their Own," Report V: Cultural Pluralism and Social Change, pp. 138-147.

(46) Henrietta V. Whiteman, "An In-service Teacher Training Program as It Relates to Native Americans," Report V: Cultural Pluralism and Social Change, pp. 153-165.

(47) Elsa N. Brizzi, "A Multicultural School: Lessons for Inservice Education," Report V: Cultural Pluralism and Social Change, pp. 148-152.

(48) "'Mainstreaming' and Inservice Teacher Education," "Mainstreaming," Report II: Interviews, pp. 53-54, 69.

(49) Winifred I. Warnat, "Early Childhood Education: A New Perspective in Inservice Training," Report IV: Creative Authority and Collaboration, pp. 126-134.

(50) Louis J. Rubin, "The Societal Future and Teaching," Report V: Cultural Pluralism and Social Change, pp. 115-131.

(51) "Multiethnic/Bilingual Education," "'Mainstreaming' and Inservice Teacher Education," Report II: Interviews, pp. 53-54.

APPENDIX A

TEACHER CORPS RECRUITMENT AND TECHNICAL RESOURCE CENTERS

Western RTR Center
William C. Hill, Director
University of Southern California
311 South Spring
Los Angeles, California 90015
(213) 625-7204

Midwestern RTR Center
Floyd T. Waterman, Director
University of Nebraska
Center for Urban Education
3805 North 16th Street
Omaha, Nebraska 68110
(402) 554-2773

Great Lakes RTR Center
Barbara A. Vance, Director
Wayne State University
2978 W. Grand Boulevard, 2nd Floor
Detroit, Michigan 48202
(313) 577-1618

Northeastern RTR Center
Donald W. Parker, Director
Howard University
1411 K Street, N.W., Suite 420
Washington, D. C. 20005
(202) 737-7868

Southeastern RTR Center
Michael G. Baker, Director
University of Georgia
337 South Milledge Avenue, Room 209
(404) 542-5862

Chief of Center Operations:

Velma Robinson
Teacher Corps
U.S. Office of Education
400 Maryland Avenue, S.W.
Washington, D. C. 20202
(202) 245-8275

APPENDIX B

PROJECT CONSULTANT INTERVIEWERS

Ursula Anderson	Midwestern RTR Center
Roxie Bagley	Western RTR Center
Michael Baker	Southeastern RTR Center
Wilbert Bledsoe	Great Lakes RTR Center
James Boyer	Kansas State University
Elsa Brizzi	University of Southern California
Carol Bryant	Wayne County Junior College, Detroit
Roger Bryant	Southeastern RTR Center
Ronald Butler	Carroll County, Georgia School System
Francine Clemons	Washington, D. C. Public Schools
Paul Collins	New York Teacher Corps Network
Suzie Collins	Pasadena Unified School District
Carol Coy	Northeastern RTR Center
Joyce Ellis	Boston Indian Council
Floyd Falany	Reinhart College
Paul Fisher	University of Southern California
Eugene George	University of South Carolina
Eileen Goins	University of Seattle
Turner Goodlow	Houston Independent School District
John Green	University of South Alabama
Marilyn Harper	Stanford University
Edith Harrison	Portland COP Project
William C. Hill	Western RTR Center
Willie Hodge	University of Toledo
Janet Hunter	Compton Unified School District
Andrew Johnson	Wayne State University
Bruce Joyce	Stanford University
Mary Kelley	Consultant, Worcester, Mass.
Hal Knight	West Virginia Institute
Margaret Koch	Pasadena Unified School District

Reba Lassiter	Pasadena Unified School District
Billie Lipsey	Detroit Public Schools
Mary Logan	Federal City College
Patricia Matthews	Northeastern RTR Center
Donald Mims	Los Angeles City Schools
Barbara Ogletree	Southeastern RTR Center
Roger Pankratz	Western Kentucky University
Donald Parker	Northeastern RTR Center
Lucy Peck	Hofstra University
Lorenzo Reid	Consultant, Washington, D. C.
Terry Rice	Stanford University
Joseph Romo	Western RTR Center
Richard Stroup	Costa Mesa School District
Beulah Tumpkin	Consultant, Detroit
Rupert Trujillo	University of New Mexico
Barbara Vance	Great Lakes RTR Center
Susan Vernand	Pasadena Unified School District
Floyd Waterman	Midwestern RTR Center
Doris Wilson	Southeastern RTR Center
James Wilson	Wayne State University
Roger Wilson	Northern Arizona University